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Pleurogonium (Crustacea: Isopoda: Asellota: Paramunnidae) from Hokkaido, Northern Japan, with Descriptions of Two New Species

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Three species and one subspecies of *Pleurogonium*, including two new to science, are reported from Akkeshi, Hokkaido, as the first record of this genus from northern Japan. *Pleurogonium bifolium* sp. nov. has bilobed coxal plates and posterolaterally projecting pereonites 2–4 as in *P. godeevae* Kussakin, 1962, but it is distinguished from the latter in having a frontally bilobed head, pereonite 1 with a pair of stout lateral projections, and a pleotelson with its greatest width anteriorly. *Pleurogonium hispidum* sp. nov. differs from its congeners by the presence of a trilobed frontal margin of the head and a pair of mid-dorsal setae on all ten segments from head to pleotelson. *Pleurogonium angustum* Kussakin, 1972 and *P. inerme orientale* Kussakin, 1962 are recorded from Japan for the first time.
Key Words: *Pleurogonium*, new species, Paramunnidae, Asellota, Isopoda, Akkeshi, Hokkaido, Japan

Introduction

Pleurogonium is a genus of blind asellote isopods in the family Paramunnidae. It contains 14 species, all known from marine benthic habitats. Among the 11 species distributed in the Northern Hemisphere (Hansen 1916; Kussakin 1962, 1972; Menzies 1951; Sars 1864, 1866, 1883; Schiecke and Modigh-Tota 1976), three species and two subspecies were described from the Kamchatka Peninsula and Kurile Islands: *Pleurogonium gordeevae* Kussakin, 1962, *P. inerme orientale* Kussakin, 1962, *P. rubicundum kamtschaticum* Kussakin, 1962, *P. laciniosum* Kussakin, 1962, and *P. angustum* Kussakin, 1972. In Japanese waters, one unidentified species is known from Amakusa, Kumamoto Prefecture, southern Japan (Kikuchi 1968). Discovery of this genus around Hokkaido, northern Japan, has been expected because the region is located near the Kamchatka Peninsula and Kurile Islands, where *Pleurogonium* are abundant. During our recent coastal survey at Akkeshi, eastern Hokkaido, specimens of asellote isopods were collected. Based on this material, we describe in this paper two new species, *Pleurogonium bifolium* sp. nov. and *P. hispidum* sp. nov., and also record *P. angustum* Kussakin, 1972 and *P. inerme orientale* Kussakin, 1962 from Japanese waters for the first time.

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Materials and Methods

Seaweeds, seagrasses, and stones were collected by hand in the intertidal zone. Sediment samples were obtained in the field by using a Smith-McIntyre grab or a dredge. All the samples were washed in a plastic bucket, and the suspension was decanted through a sieve with a pore size of 0.1 mm. The specimens retained were fixed with 5% neutralized formalin solution diluted with seawater and preserved in 70% ethanol. Each individual was dissected and prepared for observation using a light microscope equipped with Nomarski differential interference contrast (Shimomura and Mawatari 1999). Total length indicated in "Material Examined" was measured from the tip of the head to the end of the pleotelson.

The type series is deposited in the Zoological Museum, Division of Biological Sciences, Graduate School of Science, Hokkaido University (ZIHU). The new species were carefully compared with the original descriptions of its close relatives.

Taxonomic Account

Pleurogonium bifolium sp. nov.

(Figs 1–2)

Material Examined. Akkeshi, eastern Hokkaido, northern Japan: holotype, ovig. female, 1.6 mm (ZIHU-01934), 0.5 m, intertidal zone of Daikoku Island, 11 July 1998; paratype, ovig. female, 1.8 mm (ZIHU-01935), data same as for holotype.

Description. *Female*: Body (Fig. 1A) about 1.9 times as long as maximum width, widest at pereonite 3. Head small, about 1.9 times as broad as long, without setae; lateral margins of head projecting; frontal margin of head bilobed; labrum not visible in dorsal view; posterior margin of head convex. Pereonites 1–4 each with few lateral setae, without dorsal setae; pereonites 5–7 each with pair of anterolateral setae, without dorsal setae. Pereonite 1 laterally projecting, with rounded apices; pereonites 2–4 posterolaterally projecting, with rounded apices; pereonites 5–7 laterally rounded, without lateral projections. Pereonites 1 to 3 increasing in width; pereonites 4 to 7 decreasing in width. Pereonite 1 about half as long as pereonite 2; pereonites 2 and 3 subequal in length; pereonite 4 shorter than pereonite 3; pereonites 5–7 short, subequal in length. Coxal plates visible in dorsal view on pereonites 2–7, each with single lateral seta; coxal plates of pereonites 2 and 3 laterally rounded; coxal plates of pereonites 4–7 laterally bilobed. Pleonite as long as pereonite 7, without setae. Pleotelson as long as broad, widest at anterior 1/4, with 35 or 38 setae on posterior margin, without dorsal setae. Uropod (Fig. 1B) biramous; dorsal ramus slender, short, with 2 distal setae; ventral ramus about 2.5 times as long as dorsal ramus, with 4 distal and 3 ventral setae.

Antenna 1 (Fig. 1C) with 4-articulate peduncle and 2-articulate flagellum. Peduncular article 1 broadest, with 1 mesial and 1 distolateral setae; article 2 longest, with 2 mesial and 5 distolateral setae; article 3 about 1/3 as long as article 2, with 1 distolateral seta; article 4 slightly shorter than article 3, with 1 distomesial seta. Flagellar article 1 longer than peduncular article 4, without setae; article 2 slightly longer than article 1, apically bearing aesthetasc and 2 short and 1 long setae.

Antenna 2 (Fig. 1D) with peduncle composed of 6 articles: articles 1 and 2 sube-

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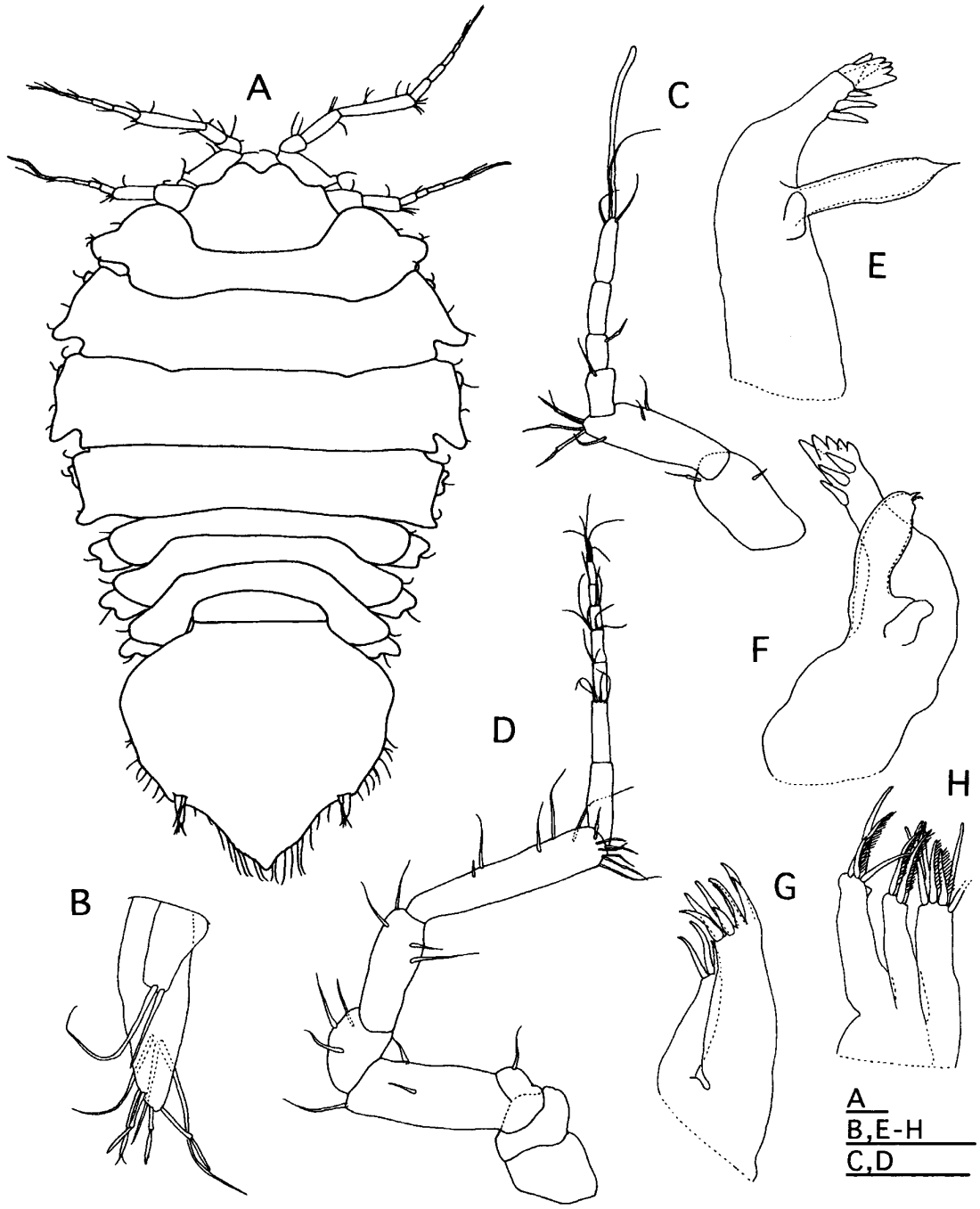

Fig. 1. *Pleurogonium bifolium* sp. nov., holotype female: A, habitus, dorsal; B, left uropod, dorsal; C, right antenna 1, ventral; D, right antenna 2, dorsal; E, left mandible, dorsal; F, right mandible, dorsal; G, left maxilla 1, ventral; H, left maxilla 2, dorsal. Scales=0.1 mm.

qual in width; article 2 shortest, without setae; article 3 slightly shorter than article 6, with convex proximolateral protrusion bearing lateral seta, and with 1 distomesial, 1 lateral, and 1 dorsal setae; article 4 half as long as article 3, with 3 mesial setae; article 5 about 1.5 times as long as article 4, with 2 distomesial and 2 lateral setae; article 6 longest, with 5 mesial and 7 distal setae. Flagellum longer

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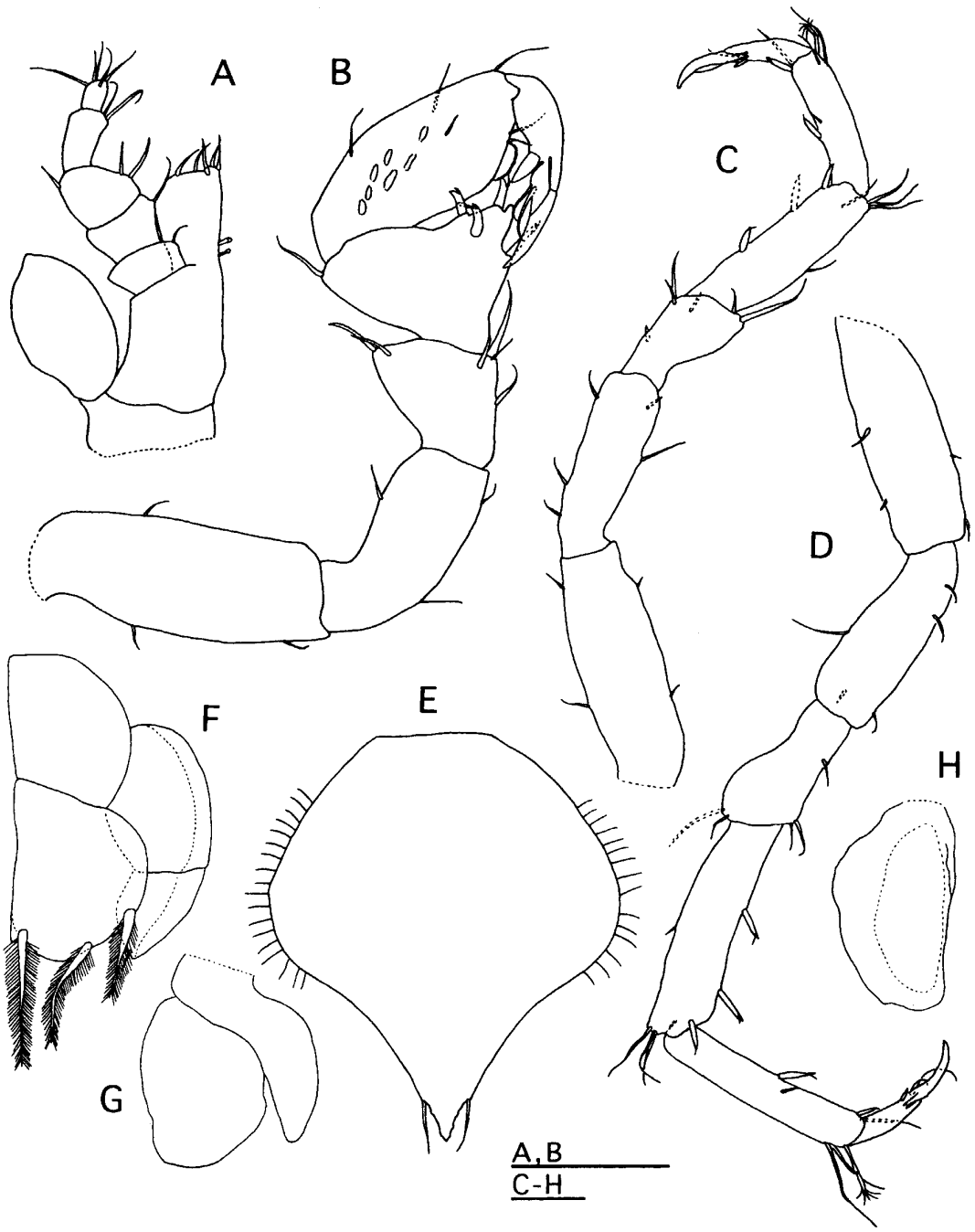

Fig. 2. *Pleurogonium bifolium* sp. nov., holotype female: A, right maxilliped, ventral; B, left pereopod 1, mesial; C, right pereopod 2, mesial; D, right pereopod 7, mesial; E, operculum, ventral; F, right pleopod 3, dorsal; G, left pleopod 4, ventral; H, left pleopod 5, dorsal. Scales= 0.1 mm.

than peduncular article 6, composed of 7 articles, each with few distal setae.

Left mandible (Fig. 1E) with incisor bearing 2 cusps; lacinia mobilis with 4 teeth; spine row composed of 3 spines; molar process with acute apex. Right mandible (Fig. 1F) lacking lacinia mobilis; incisor with 5 cusps; spine row com-

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posed of 3 spines; molar process with rounded apex, bearing 2 setae.

Maxilla 1 (Fig. 1G) with inner lobe bearing 3 apical setae; outer lobe with 8 apical setae. Maxilla 2 (Fig. 1H) with inner lobe bearing 4 simple and 2 pectinate setae apically; outer 2 lobes each with 2 simple and 2 pectinate setae.

Maxilliped (Fig. 2A) with narrow palp composed of 5 articles; article 1 broadest, with 1 mesial seta; article 2 trapezoidal, with 1 mesial seta; article 3 longest, with 2 mesial and 1 lateral setae; article 4 slightly shorter than article 3, with 2 mesial setae; article 5 narrowest, with 5 apical setae; endite narrow, bearing 5 setae distally and 2 coupling hooks mesially; epipod ovate, with rounded apex, slightly narrower than endite, reaching second article of palp.

Pereopod 1 (Fig. 2B) shorter than pereopods 2–7: basis longest, with 2 ventral and 1 dorsal setae; ischium narrower than basis, with 2 ventral and 1 dorsal setae; merus trapezoidal, with 4 ventral and 2 dorsal setae; carpus trapezoidal, broadest, with 4 robust sensory setae and small tooth ventrally, and distodorsal seta; propodus ovate, with 2 dorsal, 1 lateral, and 1 mesial setae, and 7 mesial scales, and with 2 simple setae and small fringe on ventral margin; dactylus shorter than propodus, narrowest of all articles, with 4 subdistal setae, curved unguis, and strong accessory spine.

Pereopods 2–7 (Fig. 2C, D) slightly increasing in length posteriorly; bases each with 2 ventral and 2 dorsal setae; ischia shorter than bases, each with 3 ventral, 1 distolateral, and 1 dorsal setae; meri trapezoidal, each with 3 ventral, 2 distodorsal, and 0 or 1 distolateral setae; carpi shorter than bases, each with 4 dorsal and 1 distolateral setae, and ventrally with 3 robust sensory setae; propodi narrower than carpi, each with 1 distodorsal filoplume-like and 2 simple setae, and with 2 robust sensory setae and 2 simple setae on ventral margin; dactyli each with 4 subdistal setae, curved unguis, and minute accessory spine.

Operculum (Fig. 2E) about 1.2 times as long as broad, with acute apex, laterally set with 33 setae, and bearing pair of subapical setae. Pleopod 3 (Fig. 2F) with endopod bearing 3 stout, plumose setae distally; exopod composed of 2 articles, narrower than endopod; article 2 with short, terminal seta. Pleopod 4 (Fig. 2G) with exopod moderately broad, tapering to rounded apex; endopod broader than exopod. Pleopod 5 (Fig. 2H) ovate, uniramous, about 1.6 times as long as broad.

Male: Unknown.

Etymology. The specific name "*bifolium*" ("of two leaves" in Latin) refers to the bilobed frontal margin of the head.

Remarks. The following features displayed by the new species indicate that it belongs to *Pleurogonium*: coxal plates of pereonites 5–7 visible in dorsal view, head lacking eyes, uropod lacking peduncle, antenna 2 shorter than body, article 3 of antenna 2 longer than broad, mandible lacking palp and with pointed or rounded apex.

The posterolaterally projecting pereonites 2–4 and the laterally bilobed coxal plates link the new species to *Pleurogonium godeevae* Kussakin, 1962, known only from the Sea of Okhotsk. *Pleurogonium bifolium* sp. nov. is, however, distinguished from *P. godeevae* by the following features (character states of *P. godeevae* are given in parentheses): the head has a bilobed frontal margin (not bilobed); pereonite 1 has a pair of stout lateral projections (moderately weak projections); the operculum is apically pointed (apically rounded); and the pleotelson is widest anteriorly (widest at the middle part of the pleotelson), with a pointed apex

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(rounded apex).

Pleurogonium hispidum sp. nov.
(Figs 3–4)

Material Examined. Akkeshi, eastern Hokkaido, northern Japan: holotype, male, 1.1 mm (ZIHU-01936), 10 m, sand, Smith-McIntyre grab, Daikoku Island, 16 Apr. 1998; paratypes, female, 0.8 mm (ZIHU-01937), 4 m, dead oyster shells, dredge, Lake Akkeshi, 7 Nov. 1997; female, 1.3 mm (ZIHU-01938), data same as for holotype; male, 1.3 mm (ZIHU-01939), dredge, 7 m, clay rock, Nakanose, 8 July 1998.

Description. *Male*: Body (Fig. 3A) about 2.2 times as long as maximum width. Head broad and short, about 1.8 times as broad as long, with 2 dorsal setae; lateral margins of head projecting; frontal margin of head trilobed; labrum surpassing head anteriorly; posterior margin of head convex. Pereonites 1–7 laterally rounded, each with few lateral setae and pair of dorsal setae. Pereonite 1 slightly shorter than pereonite 3; pereonite 2 about 3/4 as long as pereonite 1; pereonite 3 longest; pereonite 4 slightly shorter than pereonite 3; pereonites 5–7 subequal in length. Pereonites 1–3 widest; pereonites 4 and 5 subequal in length, slightly narrower than pereonites 1–3; pereonite 6 slightly narrower than pereonite 5; pereonite 7 narrower than pereonite 6. Coxal plates visible in dorsal view on all pereonites, each with single lateral seta; all coxal plates laterally rounded. Pleonite about 3/4 as long as pereonite 7, with pair of dorsal setae. Pleotelson about 1.4 times as long as broad, widest at midlength, with 16 dorsal setae and 32–45 marginal setae. Uropod (Fig. 1B) biramous; dorsal ramus slender, long, with 2 distal setae; ventral ramus about 1.4 times as long as dorsal ramus, with 5 distal and 2 ventral setae.

Antenna 1 (Fig. 3C) with 4-articulate peduncle and 2-articulate flagellum. Peduncular article 1 broadest, with mesial seta; article 2 longest, with 6 distal and 3 subdistal setae; article 3 about 2/5 times as long as article 2, without setae; article 4 shorter than article 3, with distolateral seta. Flagellar article 1 longer than peduncular article 4, without setae; article 2 longer than article 1, apically bearing aesthetasc and 4 short and 1 long setae.

Antenna 2 (Fig. 3D) with peduncle composed of 6 articles: articles 1 and 2 subequal in length; article 2 widest, without setae; articles 3 and 6 subequal in length, with convex proximolateral protrusion bearing lateral seta, and with 1 distomesial, 1 lateral, and 1 dorsal setae; article 4 half as long as article 3, with 3 mesial setae; article 5 about 1.4 times as long as article 4, with 5 subdistal setae; article 6 narrower than article 5, with 2 mesial, 1 dorsal, and 6 distal setae. Flagellum as long as peduncular article 6, composed of 6 articles, each with few distal setae.

Left mandible (Fig. 3E) with incisor bearing 2 cusps; lacinia mobilis with 4 teeth; spine row with 3 spines; molar process with 2 apical setae. Right mandible (Fig. 3F) lacking lacinia mobilis; incisor with 5 cusps; spine row with 3 spines; molar process with 2 apical setae.

Maxilla 1 (Fig. 3G) with inner lobe bearing 3 apical setae; outer lobe with 8 apical setae. Maxilla 2 (Fig. 3H) with inner lobe armed apically with 5 simple and 2 pectinate setae; outer 2 lobes each with 2 simple and 2 pectinate setae.

Maxilliped (Fig. 4A) with broad palp composed of 5 articles; article 1 slightly

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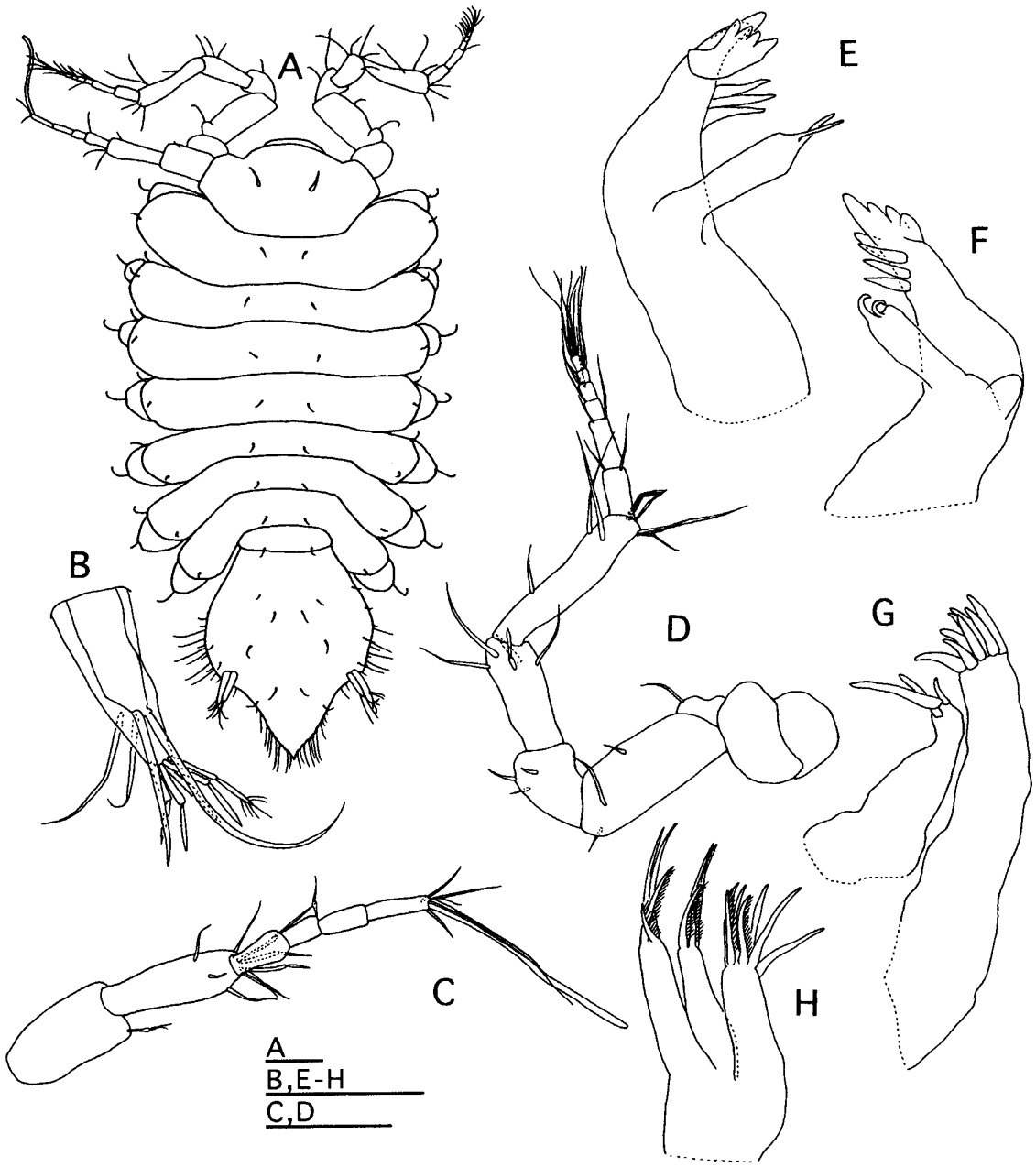

Fig. 3. *Pleurogonium hispidum* sp. nov., A–F, H, holotype male; G, paratype male (ZIHU-01939): A, habitus, dorsal; B, left uropod, dorsal; C, left antenna 1, dorsal; D, left antenna 2, ventral; E, left mandible, dorsal; F, right mandible, dorsal; G, right maxilla 1, dorsal; H, right maxilla 2, ventral. Scales=0.1 mm.

narrower than article 2, with 1 mesial seta; article 2 broadest, trapezoidal, with 2 mesial and 1 lateral setae; article 3 longer than article 2, with 3 mesial and 1 lateral setae; article 4 longest, with 2 mesial setae; article 5 narrowest, with 2 apical and 2 subapical setae; endite moderately stout, with 6 distal and few subdistal setae, and with 2 coupling hooks mesially; epipod ovate, narrower than endite, with rounded apex, reaching second article of palp.

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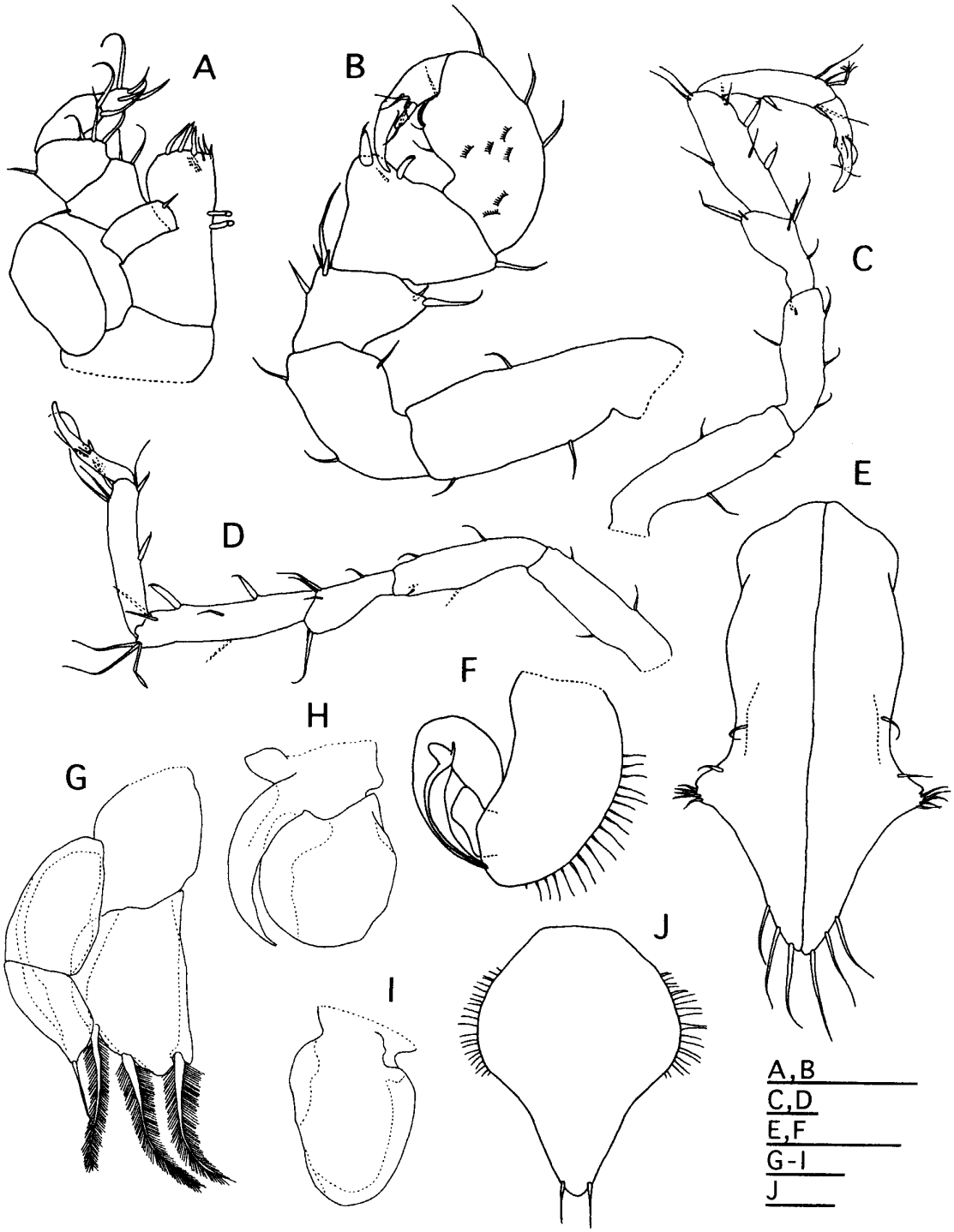

Fig. 4. *Pleurogonium hispidum* sp. nov., A, J, paratype female (ZIHU-01938); B–I, holotype male: A, right maxilliped, ventral; B, right pereopod 1, mesial; C, left pereopod 2, mesial; D, left pereopod 7, mesial; E, pleopod 1, ventral; F, left pleopod 2, ventral; G, right pleopod 3, ventral; H, right pleopod 4, ventral; I, left pleopod 5, ventral; J, operculum, ventral. Scales= 0.1 mm.

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Pereopod 1 (Fig. 4B) shorter than pereopods 2–7: basis longest, with 2 ventral and 1 dorsal setae; ischium as broad as basis, with 2 ventral and 1 dorsal setae; merus trapezoidal, with 2 dorsal and 4 distal setae; carpus trapezoidal, broadest, armed ventrally with 2 robust sensory and 1 simple setae, dorsodistally with simple seta; propodus ovate, with 3 setae dorsally and 6 scales mesially; lateral margins of propodus deeply concave, with 3 simple setae and small fringe; dactylus shorter than propodus, narrowest of all articles, with 4 subdistal setae, curved unguis, and strong accessory spine.

Pereopods 2–7 (Fig. 4C, D) slightly increasing in length posteriorly; bases each with 2 ventral and 1 dorsal setae; ischia shorter than bases, each with 2 ventral, 2 subdistal, and 1 dorsal setae; meri trapezoidal, each with 3 ventral, 2 distodorsal, and 1 subdistal setae; carpi longer than propodi, each with 3 or 4 dorsal, 2 distal, and 1 lateral setae, and ventrally armed with 2 robust sensory setae; propodi narrower than carpi, each with 1 filoplume-like and 2 simple setae dorsodistally, and with 2 robust sensory setae and simple seta on ventral margin; dactyli each with 4 subdistal setae, curved unguis, and minute accessory spine.

Pleopod 1 (Fig. 4E) about 2.2 times as long as broad, with pair of ventrolateral setae, 3 pairs of apical setae, and pair of short lateral projections; each projection bearing basal seta and 5 apical setae. Pleopod 2 (Fig. 4F) with broad protopod and convex lateral margin with row of setae; endopod with slender second article; exopod stout. Pleopod 3 (Fig. 4G) with endopod bearing 3 stout, plumose setae distally; exopod composed of 2 articles, narrower than endopod; article 2 with long terminal seta. Pleopod 4 (Fig. 4H) with narrow exopod tapering to pointed apex; endopod broader than exopod. Pleopod 5 (Fig. 4I) ovate, uniramous, about 1.4 times as long as broad.

Female: Similar to male in morphology of all pereonal appendages. Body about twice as long as maximum width, widest at pereonites 2 and 3. Pereonite 1 slightly shorter than pereonite 2; pereonites 2 and 3 subequal in length; pereonite 4 slightly longer than pereonite 3; pereonite 5 shortest; pereonites 6 and 7 subequal in length. Operculum (Fig. 4J) about 1.4 times as long as broad, with rounded apex, laterally armed with 44 or 53 setae, subapically with pair of setae.

Etymology. The specific name "*hispidum*" ("rough" in Latin) refers to the dorsal condition of the head, the pereonites, and the pleotelson covered with setae.

Remarks. The present new species is assigned to *Pleurogonium* because it has the following characters: coxal plates of pereonites 5–7 visible in dorsal view, no eyes, no peduncle of uropod, short antenna 2, elongate article 3 of antenna 2, no mandibular palp, and pointed or rounded apex of mandibular molar process.

Pleurogonium hispidum sp. nov. is similar to *Pleurogonium latimanum* Hansen, 1916, known only from the Davis Strait in the North Atlantic Ocean, in having pereonites 1–5 of approximately the same width. The two species, however, differ from one another in the following features (those of *P. latimanum* are given in parentheses): the head has a trilobed frontal margin (unilobed margin); the head is short (long); all ten segments from head to pleotelson have a pair of dorsal setae each (without dorsal setae); the dorsal ramus of the uropod is long (short); the propodus of pereopod 1 has a deep depression on the ventroproximal margin (shallow depression), and the propodus of the pereopod 1 is not expanded posterodorsally (expanded posterodorsally).

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Pleurogonium inerme orientale Kussakin, 1962
(Fig. 5)

Pleurogonium inerme orientale Kussakin, 1962: 105–109, figs 30, 31 (type locality: Shikotan Island); Kussakin 1979: 122; Kussakin and Mezhov 1979: 184; Kussakin 1988: 351, figs 300, 301.

Material Examined. Akkeshi, eastern Hokkaido, northern Japan: 4 females, 1.9–2.1 mm (ZIHU-01940–43), 0.5 m, intertidal, Daikoku Island, 6 July 1997; female, 1.8 mm (ZIHU-01944), ovig. female, 1.7 mm (ZIHU-01945), 7 m, clay rock, dredge, Nakanose, 8 July 1998; 15 ovig. females, 1.8–2.2 mm (ZIHU-01946–60), female, 1.8 mm (ZIHU-01961), 0.5 m, intertidal, Daikoku Island, 11 July 1998.

Description. *Female*: Body (Fig. 5A) about 1.8 times as long as maximum width, widest at pereonite 3. Head narrow and long, about 1.5 times as broad as long, without setae; lateral margins of head projecting; frontal margin of head convex; labrum visible in dorsal view; posterior margin of head convex. Pereonites 1–7 laterally rounded, with few lateral setae and no dorsal setae. Pereonites 1 to 3 increasing in width; pereonites 4 to 7 decreasing in width. Pereonites 1 to 3 increasing in length; pereonite 4 slightly shorter than pereonite 3; pereonites 5–7 short, subequal in length. Coxal plates visible in dorsal view on pereonites 1 and 4–7, laterally rounded, each with single lateral seta. Pleonite shorter than pereonite 7, without setae. Pleotelson about 1.4 times as long as broad, widest at midlength, with 45–77 marginal setae and no dorsal setae. Uropod (Fig. 5B) biramous; dorsal ramus slender, long, with 2 distal setae; ventral ramus about 2.7 times as long as dorsal ramus, with 6 distal and 2 ventral setae.

Pereopod 1 (Fig. 5C) shorter than pereopods 2–7: basis longest, with 2 ventral and 1 dorsal setae; ischium as broad as basis, with 1 ventral and 1 dorsal setae; merus trapezoidal, with 5 ventrodistal and 2 dorsal setae; carpus trapezoidal, broadest, with 3 robust sensory and 2 simple setae ventrally; propodus ovate, with 3 dorsal setae and 13 or 14 mesial scales, and with 4 simple setae and small fringe on ventral margin; dactylus shorter than propodus, narrowest of all articles, with 5 subdistal setae, curved unguis, and strong accessory spine.

Operculum (Fig. 5D) about 1.3 times as long as broad, with rounded apex, armed laterally with 39–56 setae, subapically with pair of setae.

Remarks. This taxon was first described by Kussakin (1962) as a subspecies of *Pleurogonium inerme* G. O. Sars, 1883. Kussakin distinguished his new subspecies from the nominotypical form by the proportional length of the head and the shape of the operculum. The head is relatively narrower and longer in *P. i. orientale* than in *P. i. inerme*. The operculum of *P. i. orientale* is much broader than that of the nominotypical form, with its width abruptly becoming narrower toward the apex. The operculum becomes gently narrower toward the apex in *P. i. inerme*. The distributions of the two subspecies seem to be separated geographically: *P. i. orientale* has been recorded from Far Eastern waters [Shikotan Island and Kamchatka Peninsula (Kussakin 1962); Paramushir Island (Kussakin and Mezhov 1979); Primorskii (Kussakin 1988)], but *P. i. inerme* is restricted to the North Atlantic Ocean [west coast of Norway (G. O. Sars 1883); Kattegat (Hansen 1916); east coast of Iceland, Jan Mayen Island, and west coast of Ireland (Hansen 1916); Denmark (Wolff 1962); Bay of Funday (Schultz 1969); Spitsbergen (Kussakin 1988)]. *Pleurogonium in-*

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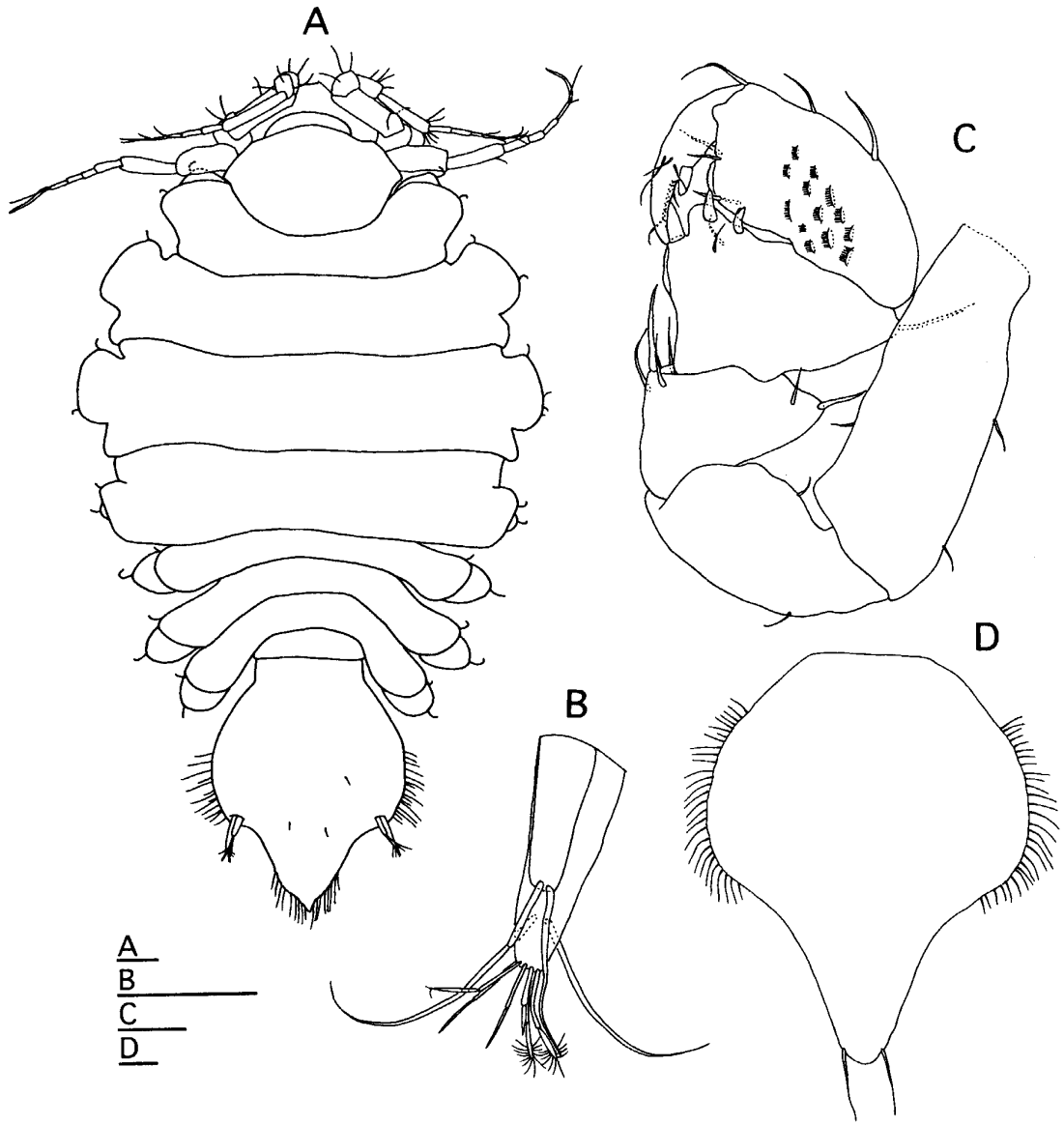

Fig. 5. *Pleurogonium inerme orientale* Kussakin, A, female (ZIHU-01960); B, female (ZIHU-01946); C, D, female (ZIHU-01947): A, habitus, dorsal; B, right uropod, dorsal; C, right pereopod 1, mesial; D, operculum, ventral. Scales=0.1 mm.

erme orientale and *P. i. inerme* can be distinguished from other species of the genus by the following features: 1) the body is elongate oval and widest at pereonite 3; 2) the body lacks dorsal setae; 3) all the pereonites and coxal plates are laterally rounded; 4) the pleotelson is widest at midlength; 5) the propodus of pereopod 1 is ovate; 6) the operculum has a pair of subapical setae and many marginal setae.

The present specimens from Akkeshi agree well with *Pleurogonium inerme orientale* in all respects cited above, and the sampling location is just barely outside the previously known geographical range of this subspecies. Therefore, we identify our specimens with *Pleurogonium inerme orientale* without doubt. In this study, the taxonomic status of the two subspecies is not evaluated, because no

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specimen from the Atlantic Ocean has been available for study. Future study may eventually reveal that the two taxa represent distinct species.

It is interesting to note that no male specimen was collected during our field survey, although more than 20 females were collected.

Pleurogonium angustum Kussakin, 1972
(Fig. 6)

Pleurogonium angustum Kussakin, 1972: 175–177, fig. 8 (type locality: Kunashir Island); Kussakin and Mezhov 1979: 184; Kussakin 1988: 346–348, figs 296–297.

Material Examined. Akkeshi, eastern Hokkaido, northern Japan: female, 0.8 mm (ZIHU-01962), 4 m, dead oyster shells, dredge, Lake Akkeshi, 7 Nov. 1997.

Description. *Female*: Body (Fig. 6A) about 2.8 times as long as maximum width. Head broad and long, about 1.4 times as broad as long, with 2 dorsal setae; lateral margins of head projecting; frontal margins of head convex; labrum slightly visible dorsally; posterior margin of head convex. Pereonites 1–7 laterally rounded, without dorsal setae; pereonites 1–5 and 7 without lateral setae; pereonite 6 with pair of lateral setae. Pereonite 1 longest; pereonites 2–4 subequal in length; pereonite 5 narrowest; pereonites 6 and 7 subequal in length. Pereonites 1–3 widest; pereonite 4 slightly narrower than pereonite 3; pereonites 5–7 subequal in length, slightly narrower than pereonites 1–3. Coxal plates visible in dorsal view on pereonites 2–7, laterally rounded, each with single lateral seta. Pleonite half as long as pereonite 7, without setae. Pleotelson as long as broad, anteriorly widest, with rounded apex, bearing 7 setae on posterior margin and no dorsal setae. Uropod (Fig. 6B) biramous; dorsal ramus slender, short, with 2 distal setae; ventral ramus about 4.1 times as long as dorsal ramus, with pointed apex and 7 distal and 3 ventral setae.

Antenna 2 (Fig. 6C) with peduncle composed of 6 articles: article 1 not visible in dorsal view; article 2 without setae; article 3 broad, longer than article 6, with convex proximolateral protrusion bearing lateral seta, and with 1 mesial and 1 distolateral setae; article 4 about 1/3 as long as article 3, with mesial seta; article 5 about 1.3 times as long as article 4, with 4 distal setae; article 6 about 1.5 times as long as article 5, with 2 distomesial, 1 dorsal, and 2 distolateral setae. Flagellum longer than peduncular article 6, composed of 5 articles, each with few distal setae.

Pereopod 1 (Fig. 6D) shorter than pereopods 2–7: basis as long as propodus, with 2 ventral and 1 dorsal setae; ischium narrower than basis, with ventral seta; merus trapezoidal, with 3 ventrodistal and 2 dorsal setae; carpus trapezoidal, broadest, with 2 robust sensory setae, 3 simple setae, semicircular, pectinate lobe, and long, narrow fringe on ventral margin; propodus ovate, with 2 dorsal and 1 mesial setae, and with 3 simple setae and broad fringe on ventral margin; dactylus shorter than propodus, narrowest of all articles, with 5 subdistal setae, curved unguis, and acute accessory spine.

Operculum (Fig. 6E) about 1.2 times as long as broad, with rounded apex, armed laterally with 36 setae, subapically with pair of setae.

Remarks. The present specimens were identified with *Pleurogonium angustum* Kussakin, 1972, known only from Kunashir Island, by the following charac-

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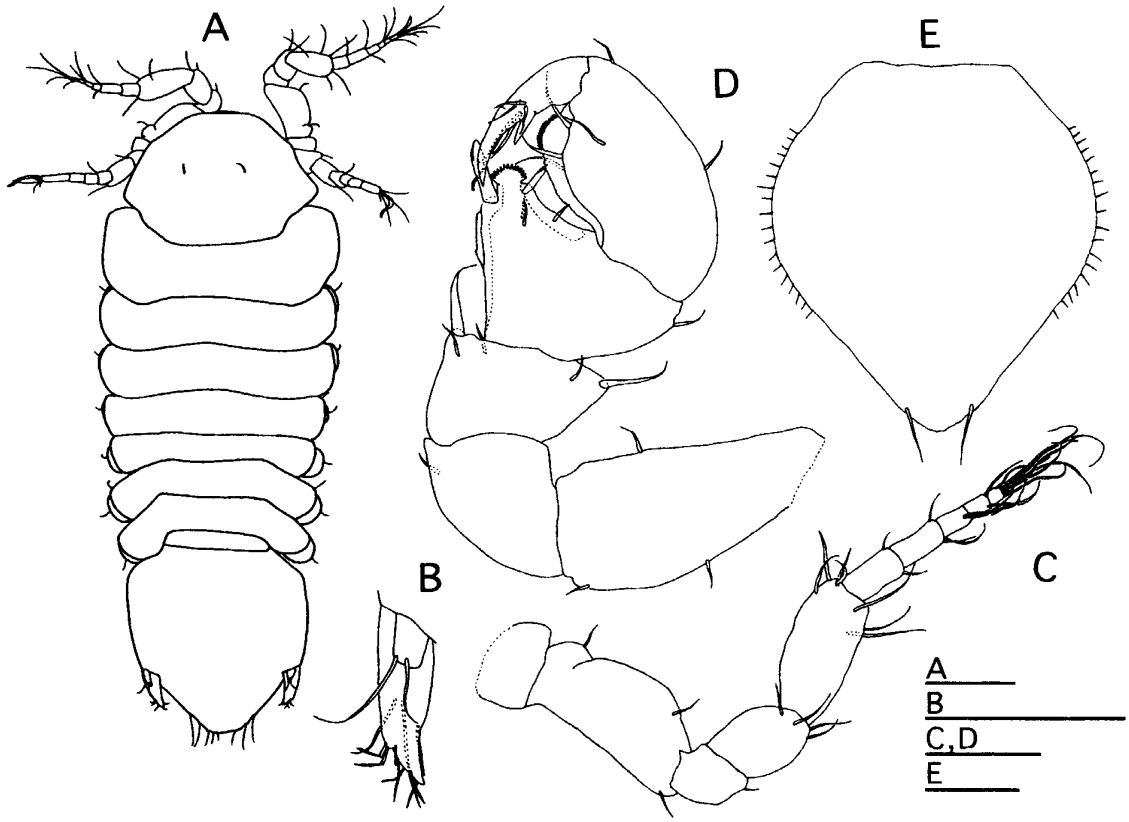

Fig. 6. *Pleurogonium angustum* Kussakin, female (ZIHU-01962): A, habitus, dorsal; B, left uropod, dorsal; C, left antenna 2, dorsal, first article not shown; D, right pereopod 1, mesial; E, operculum, ventral. Scales=0.1 mm.

ters: 1) the body is narrow; 2) the frontal margin of the head is convex; 3) the pleotelson is as long as broad, with a rounded apex; 4) the carpus of pereopod 1 is ventrodistally expanded; 5) the carpus of pereopod 1 has a semicircular, pectinate lobe on the ventrodistal margin; 6) the operculum has the same shape as that of the holotype; 7) the operculum has two apical setae. The following discrepancies between the present specimens and the original description are noted: the lateral margin of the operculum has 18 pairs of setae in the present specimens, but no setae are mentioned or illustrated in the original description; the head bears two setae on the dorsum in our specimens, but no setae are shown in the original description. These may be due to omission or artistic error in the original description.

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